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Indian Standard

SPECIFICATION FOR ENDOTRACHEAL CONNECTIONS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 1

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SPECIFICATION FOR ENDOTRACHEAL CONNECTIONS

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SPECIFICATION FOR ENDOTRACHEAL CONNECTIONS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 19 June 1967, after the draft finalized by the Anaesthesia, Resuscitation and Allied Equipment Sectional Committee had been approved by the Consumer Products Division Council.

0.2 This standard on endotracheal connections is one of a series of Indian Standards on diagnostic and anaesthetic equipment, formulated at the instance of the Advisory Committee for Development of Medical Instruments, Equipment and Appliances (Government of India). Other specifications in this series are:

IS : 3390-1965 Sphygmomanometers, mercurial
IS : 3391-1965 Stethoscopes
IS : 3392-1965 Anaesthetic airways
IS : 3393-1965 Mouth props and airways (London hospital pattern)
IS : 4113-1967 Laryngoscopes
IS : 4153-1967 Trolleys for gas anaesthetic apparatus

0.3 This standard gives interchangeable dimensions of endotracheal connections of various sizes so that these may be quickly changed in case of emergency, besides affording ready means of identification.

0.4 To allow wide scope for manufacturers in the development of both design and material, requirements have been restricted to aspects relating to functional suitability and safety.

0.5 While designing such equipment attention shall be paid primarily to the safety of the patients.

0.6 In preparing this standard, assistance has been derived from the following:

IND/GS/MED/974 Tube, endotracheal, small, medium and large (Cobb's). Ministry of Defence, Government of India.

ASA Z79.2-1961 Anaesthetic equipment : endotracheal-tube connectors and adapters. American Society of Anaesthesiologists, Inc.

0.7 This standard contains clauses which call for agreement between the purchaser and the supplier or which permit the purchaser to use his option for selection to suit his requirements. The relevant clauses are 7.1 and 8.1.

0.8 For the purpose of deciding whether a particular requirement of'this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS :2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements of endotracheal connections of Nosworthy, Magill, Rowbotham and Ayre's T-patterns and suction unions of Cobb and Magill patterns.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 **Distal End (Patient Side)** — End of the component part close to the patient.

2.2 **Proximal End (Machine Side)** — End of the component part close to the machine.

3. MATERIALS

3.1 The endotracheal connections shall be manufactured from any of the following materials:

Material	*Conforming to*
Stainless steel	0 7Cr19Ni9 of Schedule V of IS : 1570-1961-t
Aluminium alloy	HS 14 of IS: 737-1955‡
Brass	Bs 60 B of IS : 422-1959§

3.2 The material used shall be in no way harmful to human tissue and shall be resistant to action by anaesthetic gases and vapours.

4. SHAPES AND DIMENSIONS

4.1 General Design Requirements

4.1.1 The design of the components shall be such that they are leak-proof and have sufficient stability of connection to minimize accidental separation during use.

---

*Rules for rounding off numerical values (revised).

†Schedules for wrought steels for general engineering purposes.

‡Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes).

§Specification for brass sheet and strip for the manufacture of utensils.

4.1.2 The cross-sectional area of the lumen of the connections shall be not less than that of corresponding endotracheal tube for which connectors are intended.

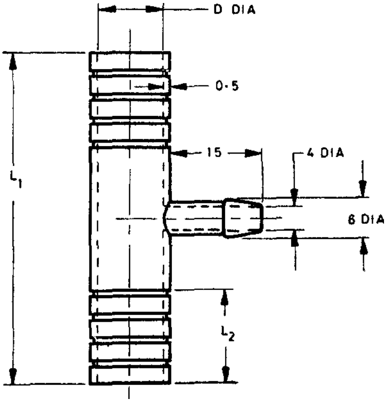
4.1.3 The wall thickness of the distal end shall be such as to permit ready insertion of the connector into the corresponding endotracheal tube for which connectors are intended.

4.1.4 The length of the arm of the connection attached to endotracheal tube shall be sufficient and may be provided with suitable grooves or ridges formed on it to give a firm and secure connection.

4.1.5 The connection may be straight or curved but it shall cause minimum turbulence in the flow of anaesthetic gases or vapours and shall not have any dead space or pockets.

4.2 **Shapes** — Typical shapes of endotracheal connections are given in Fig. 1 to 8.

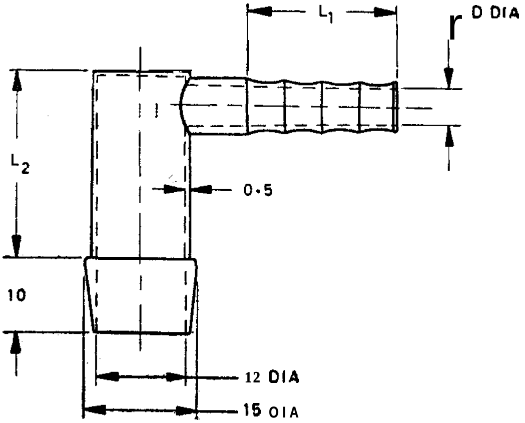
4.3 **Sizes** — The dimensions of the commonly used sizes of endotracheal connections shall be as given in Fig. 1 to 8.



L_1	L_2	D
44	10	8·5
54	15	11'0

All dimensions in millimetres.

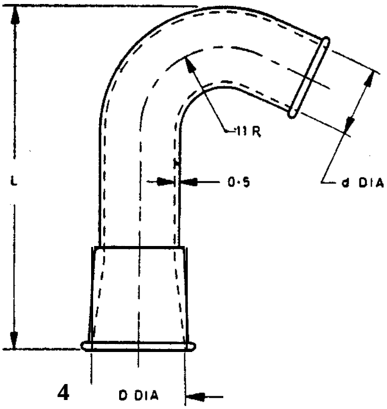
FIG. 1 ENDOTRACHEAL METAL CONNECTION, AYRE'S T-PATTERN



Size No.	L_1	L_2	*D*
5	20	25	5
9	20	25	7
11	20 20	2.5	9
		25	11

All dimensions in millimetres.

FIG. 2 ENDOTRACHEAL METAL CONNECTION, ROWBOTHAM



Siz3No.	3	*D*	*L*
4	4	12	30
		12	30
5	5	12	35
6	6	12	35
7	7	12	40
	8	12	40
9	9	12	45

All dimensions in millimetres.

FIG. 3 ENDOTRACHEAL METAL CONNECTION, MAGILL NASAL

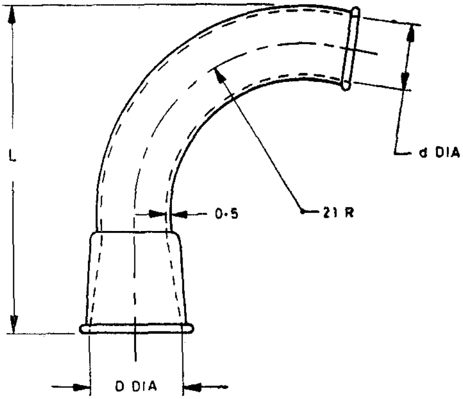
5. WORKMANSHIP AND FINISH

5.1 The surface of the endotracheal connections shall be finished smooth and be free from cracks, tool marks and like defects.

5.2 The inside of the connectors shall be clean and smooth, and free from all obstructions. The edges shall be even and rounded.

5.3 The brazing and soldering shall be smooth and sound.

5.4 The connections made of brass and aluminium alloy shall be plated chromium over nickel and the plating shall conform to Grade C of IS :1068-1958*.



Size No.	*d*	*D*	*L*
3	3	12	30
4	4	12	30
5	5	12	35
6	6	12	35
7	7	12	40
8	a	12	40
9	9	12	45
10	10	12	45
11	11	12	45

All dimensions in millimetres.

FIG. 4 ENDOTRACHEAL METAL CONNECTION, MAGILL ORAL

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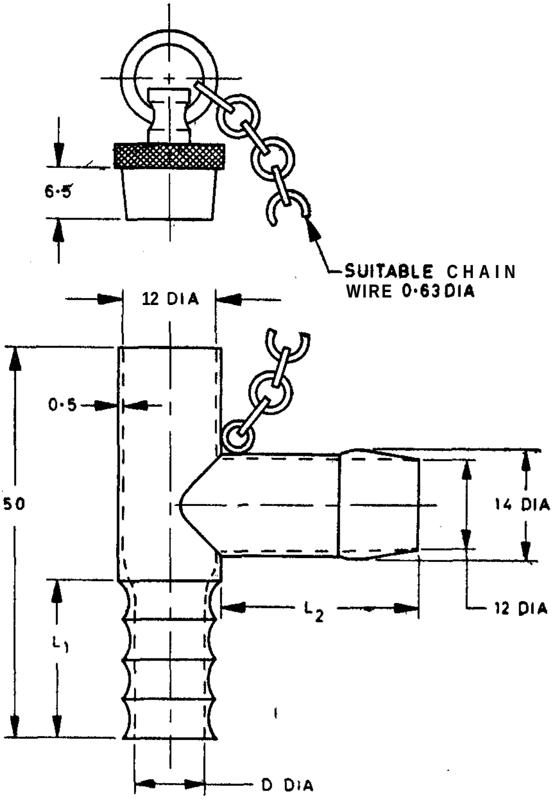
*Specification for copper, nickel and chromium electroplated coatings.



Size No.	D	L_1	L_2
3	3	20	25
5	5	20	25
7	7	20	25
9	9	20	25
11	11	20	25

All dimensions in millimetres.

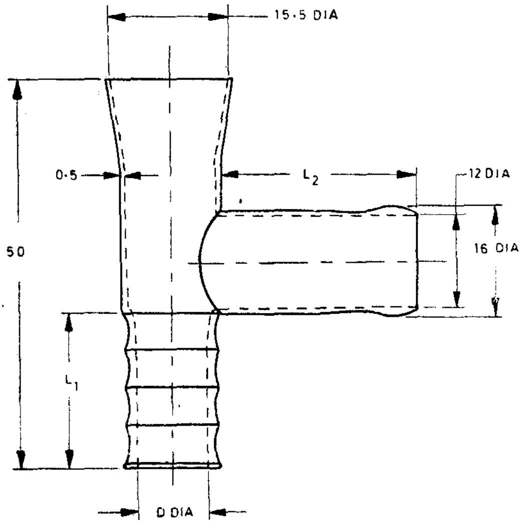
FIG. 5 ENDOTRACHEAL METAL CONNECTION, COBB UNION

6. MARKING

6.1 Each endotracheal connection shall be legibly and indelibly marked with the designation number or nominal internal diameter in millimetres which shall be visible when the connection is in use, and manufacturer's name, initials or registered trade-mark.

6.1.1 The endotracheal connections may also be marked with the ISI Certification Mark.

NOTE -The use of the IS1 Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the IS1 Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.



Size No.	D	L_1	L_2
3	3	20	25
5	5	20	25
7	7	20	25
9	9	20	25
11	11	20	25

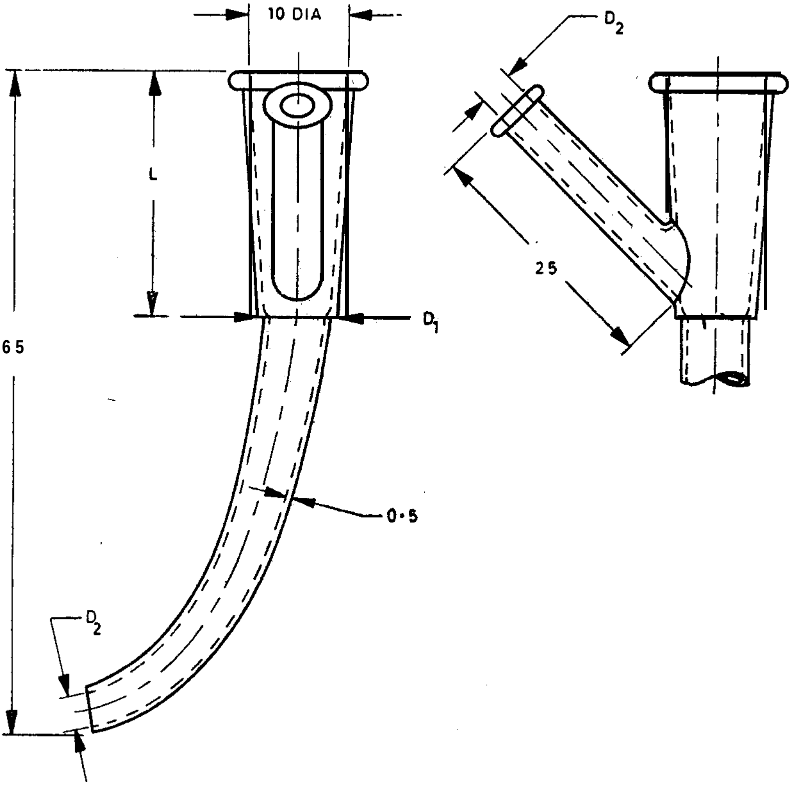
All dimensions in millimetres.

FIG. 6 ENDOTRACHEAL METAL CONNECTION, MAGILL SUCTION UNION

7. PACKING

7.1 The endotracheal connections shall he individually wrapped in soft tissue paper, wax paper or polyethylene bags and packed in cartons or as agreed to between the purchaser and the supplier.

7.2 The cartons shall carry a label indicating the types of the connections, sizes and manufacturer's name, initials or registered trade-mark and **the** country of manufacture.



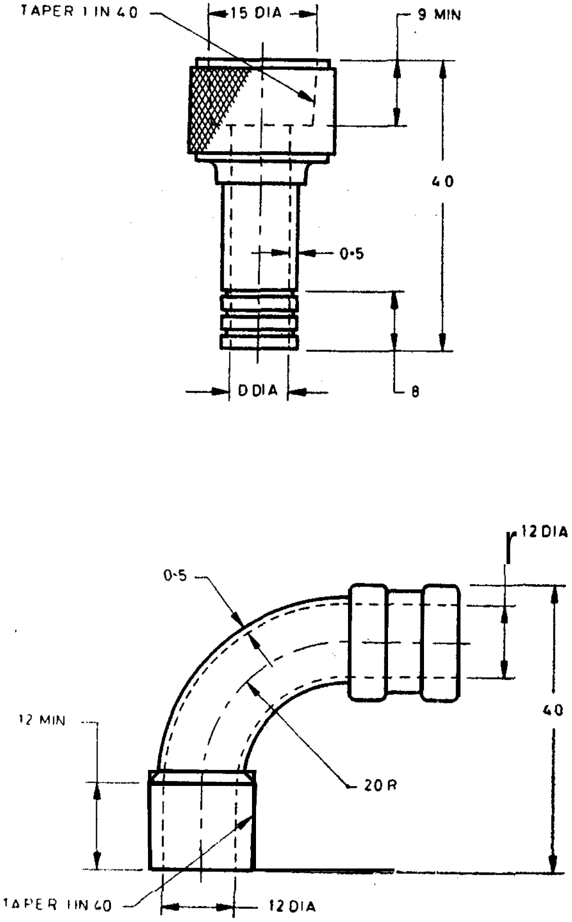
Size No.	*L*	D_1	D_2
3	20	7	3
4	25	7	4

All dimensions in millimetres.

FIG. 7 ENDOTRACHEAL METAL CONNECTION, MAGILL SUCTION UNION WITH SIDE FEED

8. SAMPLING

8.1 Sampling and acceptance criteria for endotracheal connections shall **be** as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix A.



Size No.	*D*
5	57
9	9
11	11

All dimensions in millimetres.

FIG. 8 ENDOTRACHEAL METAL CONNECTION, NOSWORTHY PATTERN

APPENDIX A

(*Clause* **8.1**)

RECOMMENDED SAMPLING SCHEME AND CRITERIA FOR CONFORMITY FOR ENDOTRACHEAL CONNECTIONS

A-1. LOT

A-1.1 In any consignment all the endotracheal connections of the same shape and size and manufactured from the same raw materials shall be grouped together to constitute a lot.

A-1.1.1 For ascertaining the conformity to the requirements of this specification, samples of connections shall be selected and tested separately for each lot.

A-2. SELECTION OF SAMPLES

A-2.1 The number of connections to be selected at random from a lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

TABLE 1 SAMPLE SIZE AND CRITERIA FOR CONFORMITY

LOT SIZE (NUMBER OF CONNECTIONS IN THE LOT) (1)	SAMPLE SIZE (NUMBER OF CONNECTIONS TO BE SELECTED IN THE SAMPLE) (2)	ACCEPTANCE NUMBER (3)
up to 25	5	0
26 ,, 50	8	0
51 ,, 100	13	0
101 ,, 150	20	1
151 ,, 300	32	2
301 ,, 500	50	3
501 ,, 1 000	80	5
1001 and above	125	7

A-2.2 The connections in the sample shall be selected at random and in order to ensure the randomness of selection, random number tables shall be used. In case random number tables are not available, the procedure for selection (see **A-2.2.1**) may be adopted.

A-2.2.1 Starting from any connection in the lot count them as 1, 2, 3, ... up to r and so on in one order, where r is the integral part of N/n (N being the lot size and n being the sample size). Every rth connection thus counted shall be withdrawn to give sample for test.

A-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-3.1 The connections selected according to A-2 shall be inspected for shape, size, workmanship and finish. A connection failing in respect of any one or more of the requirements shall be considered as defective. The lot shall be considered as conforming to the requirements of this specification if the number of defective connections in the sample does not exceed the number given in col 3 of Table 1.

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